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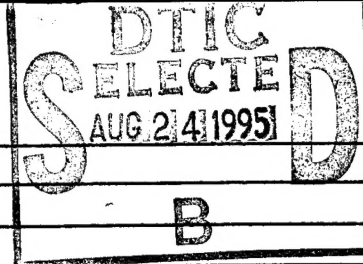SELECTED
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Operational decision making blends the tangibles of the "science" of war and the intangibles of the "art" of war. A dynamic, multi-dimensional process, operational decision making is a process that must allow decisions about current operations to occur simultaneously with decisions and planning about future operations. Within this decision making process, time and technology have become critical parts. Technology has increased the amount of information available to the commander. However, this amount of information has the potential to overwhelm the commander and slow his decision making process.

As decisions transition from information to orders and from orders to action, a thorough understanding of the decision making process is necessary. This will enable the operational commander to arrive at sound and timely decisions. Operational success is enhanced by an appropriate choice of decision making method, the management of a high volume of information and the use of time to generate tempo in overwhelming the enemy's decision making process. Technology supports this effort by providing decision making aids to help speed the decision making and planning process.

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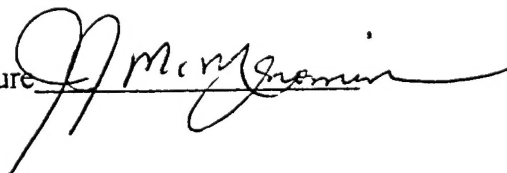THE IMPACT OF TIME AND INFORMATION (U)**

by

J.J. McMenamin

Lieutenant Colonel, U.S. Marine Corps

A paper submitted to the Faculty of the Naval War College in
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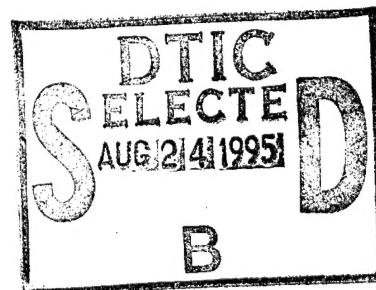are not necessarily endorsed by the Naval War College or the
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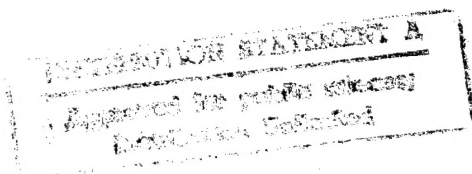
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Abstract of

OPERATIONAL DECISION MAKING:
THE IMPACT OF TIME AND INFORMATION

Operational decision making blends the tangibles of the "science" of war and the intangibles of the "art" of war. A dynamic, multi-dimensional process, operational decision making is a process that must allow decisions about current operations to occur simultaneously with decisions and planning about future operations. Within this decision making process, time and technology have become crucial parts. Technology has increased the amount of information available to the commander. However, this amount of information has the potential to overwhelm the commander and thus slow his decision making process.

As decisions transition from information to orders and from orders to action, a thorough understanding of the decision making process is necessary. This will enable the operational commander to arrive at sound and timely decisions. Operational success is enhanced by an appropriate choice of decision making method, the management of a high volume of information and the use of time to generate tempo in overwhelming the enemy's decision making process. Technology supports this effort by providing decision making aids to help speed the decision making and planning process.

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OPERATIONAL DECISION MAKING:
THE IMPACT OF TIME AND INFORMATION

OPERATIONAL DECISION MAKING

Clausewitz in <u>On War</u> described the activities' characteristic of war as "those that are merely preparations for war, and war proper."[1] At the operational level, these activities are best described as "war planning" and "war fighting." Decisions concerning war planning and war fighting are the commander's responsibility. An operational commander is responsible for making combat decisions and for the results of those decisions. He cannot delegate his responsibility to the staff or subordinate commanders.

Military decision making is about science and art. Many aspects of combat operations-- movement rates, fuel consumption, weapon effects--are quantifiable. These aspects are the "science of war." Many other elements of combat are not quantifiable. War is a human experience and cannot be regulated by mathematics. In these cases, the intangible qualities of leadership, personal experience and the commander's will become important.

Operational decision making is a dynamic multi-dimensional process that must allow decisions about current operations to occur simultaneously with decisions and planning about future operations. This concept is not new, but technological advances on today's battlefield have reduced the time and increased the possibilities that must be considered. Frederick the Great's traditional "coup d'oeil" (being able to take everything in at a glance) and the "directed telescope" of Napoleon and the Duke of Wellington is no longer enough to give modern day commanders a clear image of the battlefield.

Time and technology have become crucial parts of the decision making process. Technology now provides the commander with an ever increasing amount of information that

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can quickly overcome his decision making process. As decisions transition from information to orders and from orders to action, a thorough understanding of the decision making process is necessary. This will enable the operational commander to arrive at sound and timely decisions in the face of sustained and continuous operations. However, operational decisions are made considering two prior decisions: organizational decisions and information decisions.

> "A commander's **organizational decisions** establish a chain of command for the execution of his operational decisions. They establish a structure for the flow of orders and reports as well as for the processing of information necessary to support his own decision making and to some extent the decision making of his subordinate commanders. **Informational decisions** are those decisions made by the commander as to what he believes the situation to be, and how that situation relates to the mission he is trying to accomplish. A commander's informational decisions about what is happening, although often unstated, necessarily precede his operational decisions about what actions he wants his subordinate commanders to take."[2]

At the operational level--Joint Task Force (JTF), Army Corps or Marine Expeditionary Force (MEF)--a J- or G- staff helps the commander make and communicate those decisions. The J- or G- staffs assist the commander in decision making by acquiring, analyzing and coordinating information. What is more important, the staff must screen the mass of information available and present only what is essential to the commander with a recommendation so he will be able to make the best decision. However, this screening of information must not attempt to conceal or hide bad information, or provide information that is slanted towards what the commander wants to hear. Only a fair, objective evaluation will assist the commander in his decision making process.

DECISION MAKING METHODS[3]

The <u>Joint Staff Officer's Guide</u> and the service doctrinal manuals describe an analytical

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method for decision making. The commander and the staff follow a detailed series of steps to come up with the optimum solution. The staff studies each facet of the problem for analysis and comparison. The staff then develops several different courses of action and compares them to determine the best solution. This works well when there is sufficient time to analyze a problem and when the goal is to determine a single optimized solution. This is called **analytical decision making**.

Analytical decision making is a technique for making decisions based upon review and comparison of available information. The best decision derives from the comparison of essential factors. The technique emphasizes the evaluation of sets of options. Proponents of the analytical method believe that more efficient methods of analysis will display the superiority of the analytical method over all others. If commanders and staffs were more efficient at accomplishing analytical decision making, they could find the best solution to any operational or tactical problem. The analytical method is well suited for the "war planning" phase of the operational continuum.

Analytical decision making, however, relies on a degree of "certainty" about the critical elements of combat: the enemy, the terrain and other factors. This degree of certainty is often missing is combat. This creates a serious credibility problem when doctrine provides only one way to make decisions--analytical decision making. Commanders and staffs are often placed in situations where they must ignore doctrine to make the vast majority of time-pressured operational decisions.

Combat often forces commanders to make decisions without the benefit of a time intensive, deliberate analysis. In combat, results are more important than the process. In time

of critical situations the commander may have to go through the decision making process and issue orders based on his knowledge of the situation without taking the time to include the entire staff in the formal process. At the tactical level, the staff may not be in the decision making process at all.

This suggests that the commander must possess a flexible set of decision making methods that can meet the demands of time. When there is sufficient time, the commander can select a deliberate approach. During time critical situations, the commander may have to abbreviate this process and rely on his own judgment. The commander must choose the correct decision making method based on his assessment of the situation and the amount of available planning time.

The decision making method that is based upon the intuitive knowledge or experience of the decision maker is referred to as **recognitional decision making**. This method emphasizes the quick mental jumps at a solution to a problem and the wargaming of this solution. Recognitional decisions occur when a commander identifies a situation, formulates a reaction to the situation, evaluates the reaction for feasibility, and then either implements it, improves it, or rejects it for another reaction. Recognitional decision making, based on the intuition of the commander, is the decision making method more appropriate for "war fighting."

Recognitional decision making focuses on the commander's ability to recognize operational patterns, decide the correct counter-pattern, and rapidly apply a solution to accomplish the mission. Commanders conduct this kind of decision making all the time. Recognitional decision making is not clearly explained in doctrine and is often viewed by the uninformed as unprofessional seat-of-the-pants decision making. A study of military history

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would hardly agree with that judgment.

Recognitional decision making is implied by the crisis action planning sequence used at the JTF, Corps and MEF level. Its application is also found in the abbreviated planning process at division and brigade. The recognitional method has the commander issuing concrete guidance to the staff. The staff's role in this decision making process is to provide the commander a "safety" check. The staff will indicate difficulties to the decided course of action and ways of overcoming these difficulties.[4] The staff implements the commander's decision rather than optimizing several possible solutions.

The analytical and recognitional methods are not competing decision making methods. They are, instead, complementary options for decision making. The difference between analytical and recognitional methods is in the amount of time available to the commander and in the degree of the commander's involvement. Figure 1 shows the comparison of the decision making methods. The commander bases his choice upon his assessment of the situation.

COMPARISON OF DECISION MAKING METHODS

■ANALYTICAL METHOD	■RECOGNITIONAL METHOD
Experience Level Low	Experience Level High
Plenty of Time	Time Pressure
Slow Changing Events	Fast Changing Events
Abstract Situation; Need Justification	Rely on Commander's Judgement
Group Conflict Resolution	Little Group Conflict
Find the Best COA	Find the Fastest Workable COA
Explicit Understanding Required	Implicit Understanding Exists

Figure 1. Comparison of Decision Making Methods

DECISION MAKING AND TIME

The amount of time available to the commander will play a determining factor in the choice of decision making method. At the operational level, time can be viewed in many ways. Time can be measured in the time it takes to build-up forces in theater, the amount of time to conduct reconnaissance, the amount of time needed to reduce enemy capabilities, or the amount of time needed to position, or reposition forces. A key time element for the operational commander is the time needed to prepare, issue and execute the Air Tasking Order.

The "war fighting" goal for the operational commander is to be able to generate a high tempo of operations. This high tempo of operations requires an accelerated decision making process by the commander and his staff. It also requires an experienced commander and a staff that has worked together and is able to implement the commander's decisions. FMFM-1, Warfighting considers this accelerated decision making process a decisive advantage.

> "Whoever can make and implement his decisions consistently faster gains a tremendous, often decisive advantage. Decision making thus becomes a time-competitive process, and timeliness of decisions becomes essential to generating tempo (time = speed over time). Timely decisions demand rapid thinking, with consideration limited to essential factors. We should spare no effort to accelerate our decision making ability." [5]

Time should not be viewed as a finite asset. Current doctrine in Army and Marine Corps manuals espouse the 1/3 - 2/3 timeline for command and staff planning. This allocates 1/3 of the planning time to the commander and 2/3 to his subordinates (not the staff) for planning. This method indicates that you have "time" and this time is a finite. But to accelerate the decision making process and generate a high tempo of operations, the emphasis should be on "how many actions can I complete" not on "how long do I have to complete an action."[6]

However, the timeline method for analytical decision making can also speed up the

decision making process by providing a logical sequence for the commander and staff to follow. This is especially useful with new staffs or an inexperienced commander. It is also useful as the mental and physical capabilities of the commander and staff decline during continuous and sustained operations. A key point in using the timeline is that it allows parallel planning by subordinates that will speed up the execution of the operational commander's decision.

The accelerated decision making process implied by the recognitional method allows the operational commander to operate within the enemy commander's observation - orientation - decision - action (OODA)[7]cycle. A high tempo of operations disrupts and hinders the enemy's information gathering activities and causes confusion and uncertainty thus slowing the enemy's decision making process. The operational commander aims to shatter the cohesion of the enemy effort by operating within the mind-time-space of the enemy. Figure 2 compares decision making methods and their relation to time and the experience of the commander and staff.

INFLUENCE OF TIME/EXPERIENCE ON DECISION MAKING METHODS

INCREASING DEMAND FOR A HIGH LEVEL OF COMMANDER AND STAFF COMPETENCE

RECOGNITIONAL
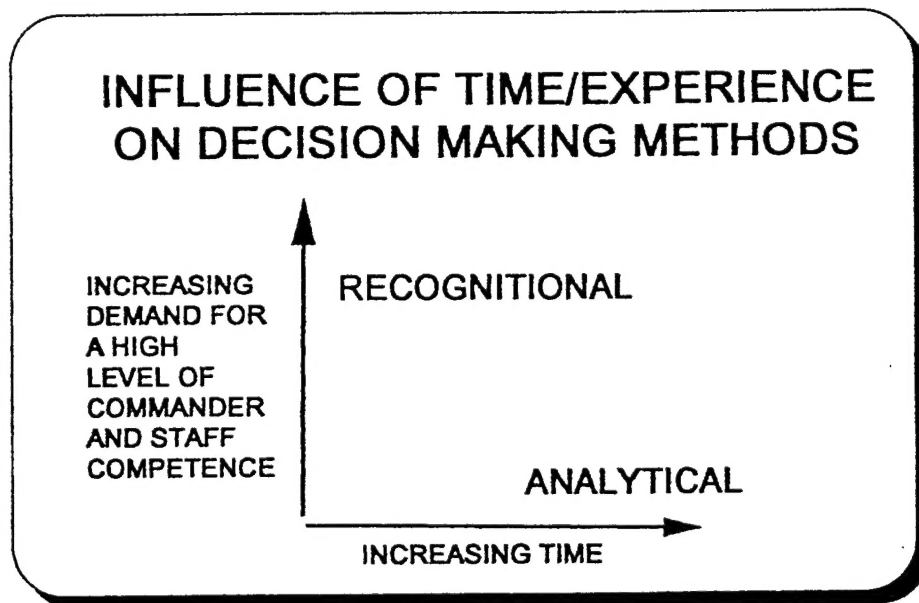
ANALYTICAL

INCREASING TIME

Figure 2. Time and the Choice of Methods of Decision Making

DECISION MAKING AND INFORMATION

The amount of information that is collected, processed and analyzed impacts, both

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positively and negatively, on the decision making process of the commander. The product of this information collection is the intelligence required by the commander. This information should not only reflect enemy information but friendly information. This collection of friendly information allows the commander to make appropriate decisions concerning courses of action based on the real time capabilities of his force.

The commander is unable to use effectively the vast quantities of information presented to him in the raw form because it would overwhelm his decision making capabilities. The staff must sort and analyze the information collected for the commander. This process takes time and can often focus on the wrong information if the commander has not articulated what information he feels is crucial to his decision making process. One way to harness this volume of information is to establish a disciplined system that focuses the collection of information on the commander's critical information requirements (CCIR)[8].

All information collected should reflect the CCIR. The staff focuses their attention on those items that are deemed critical to the commander's decision making process. The commander must clearly articulate his CCIRs to ensure that the staff discriminates from the flood of information available only those essential items that he needs to make timely decisions. Information is collected by the staff and presented to the commander in three different forms.

■ **Priority Information Requirements (PIR) -- USA/Essential Elements of Information (EEI) -- USMC**. These are critical items of information regarding the enemy and the environment needed by the commander by a particular time. This information can confirm or deny the presence of enemy forces. PIRs/EEIs relate to other information and processed intelligence to assist the commander in making a logical decision. How the commander sees

the enemy.

■ **Essential Elements of Friendly Information (EEFI).** These are key questions likely to be asked by our adversaries about specific friendly intentions, capabilities and activities. Once identified, these are capabilities and intentions that we wish to conceal from our adversaries so they are denied critical information essential to their operational effectiveness. How the enemy sees the commander.

■ **Friendly Forces Information Requirements (FFIR).** Theses are critical items of information that the commander needs about his unit. These items are critical to the concept of operations and are generally those of which he has the least flexibility. How the commander sees himself.

The information articulated in the CCIRs will reflect the level of command. A JTF commander will have different information requirements than a division or regimental commander. The type of conflict will also determine the focus of information collection. Fighting an armored force generates different information requirements than trying to fight an insurgency. The commander must know the type of war he is fighting to focus his CCIRs.

The CCIRs are designed to support the analytical and recognitional decision making strategies. The analytical decision making process seeks an optimum solution based on weighing various options. Used when there is sufficient time to allow the staff to collect information and process it, its drawback is its quest for certainty. Pushing for the 100 percent solution, or waiting for that one bit of information may squander valuable time that could be used to allow subordinates to prepare for upcoming operations. This push for certainty may also interrupt the continuity of operations. This interruption gives the enemy time to react to the

thrust of your plan or to launch an attack of his own thus negating your plan.

On the positive side, the analytical strategy allows the staff to plan for contingencies that may arise during operations. Planning branches and sequels that can take advantage of enemy miscues give the command a method of increasing the pressure on the enemy once operations begin.

> "We should also try to shape events in such a way that allows us several options so that by the time the moment of encounter arrives we have not restricted ourselves to only one course of action." [9]

The key in the analytical decision making process is effective time management and aggressive information gathering activities. Time management ensures orders are issued to allow sufficient planning time by subordinate commands. Aggressive information gathering activities permit the decision maker to modify plans based on enemy activities or an increase in friendly capabilities.

The recognitional decision making strategy takes advantage of tempo to keep the enemy off balance and thus interrupt his ability to gather information about the command. The chief drawback to the recognitional strategy is that decisions are made with less certainty regarding the enemy. The status of friendly forces may be unclear and their capabilities less than needed to continue operations. A unit could have reached its culminating point in terms of fuel, ammunition or casualties. In the hands of an inexperienced commander or an untrained staff this type of decision making could be disastrous.

Yet, assuming a well-trained staff and an experienced commander, the recognitional strategy allows the unit to generate a high tempo of operations. It places the commander inside the enemy commander's OODA loop. It requires strict adherence to the commander's intent and the commander's CCIRs. Information gathering is continuous and focused. By focusing on

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critical information, decisions can be made to take advantage enemy weaknesses. Success is

achieved by exploiting your ability to make decisions faster and by executing those decisions

quicker than the enemy can react. Commanders

> "must have the moral courage to make bold decisions and accept
> the necessary degree of risk when the natural inclination is to
> choose a less ambitious tack, for in audacity and obstinacy will be
> found safety."[10]

The timely collection of information is designed to assist the commander in his decision

making process. This effort attempts to reduce the uncertainty in warfare and speed the decision

cycle whether it be the analytical or recognitional method. However, certainty on the battlefield

will remain an allusive and unattainable goal. Two factors, the "fog" and "friction" of war

preclude certainty from ever being achieved. The "fog" of battle refers to the various

circumstances that prevent the commander from seeing every aspect of a battle with perfect

clarity. In some instances sufficient information will not be available. In others, incorrect

information will be accidentally or deliberately (through enemy deception) be provided to him.

The second factor, "friction" is, as Clausewitz observed, "The force that makes the

apparently easy so difficult." It is the unit that takes the wrong turn at night, the column that is

ambushed while moving to reinforce another unit, or the weather that changes at the wrong

moment. You can always predict that these events will occur, but not when or where, or their

effect on the outcome of the battle.

IMPROVING OPERATIONAL DECISION MAKING

Improvements to decision making can follow the three decision areas described earlier:

organizational decisions, informational decisions and operational decisions. Some of the

recommendations are not new, but they need to be continually stressed by commanders, taught

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at professional military institutions, and reinforced in training exercises.

Organizational decisions enhance subordinate decision making by establishing clear levels of decision making. This level of decision making stresses the initiative of the subordinate and gives him freedom of action within assigned parameters. The established organizational hierarchy establishes the information flow both vertically and horizontally. This organizational design and flow of information allow concurrent and parallel planning thus speeding decision making and execution.

Organizational decisions made during the "war planning" phase will increase staff cohesion and effectiveness. Army Corps headquarters and Marine MEF headquarters (Navy numbered fleets or Air Force wings as appropriate) should be seen as the base unit for JTFs. The CINCs provide augmentees especially in the areas of plans (J-5), intelligence (J-2) and communications (J-6). These augmentees provide regional experience and connectivity with higher headquarters.

Staffs should be established at a reasonable size and not allowed to grow and become focused on themselves. The staff is designed to support the commander in his decision making process, and indirectly, subordinate commanders. Increasingly large staffs have a tendency to require more and more information thus slowing the decision making process. Any information gathered by the staff must reflect the commander's CCIRs. The staff uses this information to assist in speeding the decision making process by maintaining a "running estimate." This estimate focuses on the commander's intent and anticipates what must be done to accomplished the assigned mission.

The bases for the commander's **informational decisions** are the CCIRs he articulates

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to the command. These CCIRs are his intent for surveillance, reconnaissance and other informational gathering activities. The commander must also be able to pull information from the various activities in his command to support his decision making process. This is especially true during time compressed situations. With this in mind, it is important that any established fusion centers work for the commander and not for themselves or a higher headquarters. Fusion centers must be flexible enough to react to fast changing situations and be able to assist the commander in filtering "signals" from "noise". Other staff sections provide the commander with the same level of key information. Liaison officers are used when available. These liaison officers can augment the observe-orient phase[11] focusing of friendly efforts. Used to reduce communication obstacles, liaison officers can increase the timeliness of reports and the accuracy of information.

The commander must keep the level of information gathering focused. An operational commander must not allow himself or his staff to become involved in the tactical battle. An operational commander must maintain a strong focus on future planning and preparations for future operations. This focus on the future will allow the tempo of operations to build and keep the enemy off balance. It will also allow for operational pauses to be built into the operational scheme of maneuver without breaking the continuity of operations.

Informational decisions must be made by the commander considering his ability to recognize good enough. No system or combination of systems will give certainty. The quest for the 100 percent solution will only slow operations. It will also delay any information gathering activities designed to support future operations especially if there is a scarcity of information gathering assets.

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Operational decision making requires a systematic and flexible approach to decision making by the commander. This systematic and flexible approach fosters an effective analysis of the situation by enhancing the application of professional knowledge, logic and judgment. A recommended process for the commander to use in decision making follows certain key functions. The commander must:

- Recognize the problem.

- Gather facts and make assumptions necessary to determine the scope of and

solution to the problem.

- Develop possible solutions.

- Analyze each solution.

- Compare the outcome of each solution.

- Select the best solution.

Decision making aids help support the commander in this process. Automated systems in the areas of intelligence and logistics help speed the decision making process. These systems must be flexible enough to support the commander's CCIRs; however, the commander must be flexible enough to adapt his decision making style to the available systems, if necessary. Along with using decision making aids, the commander also maintains a running estimate. This running estimate helps him plan and anticipate future decisions.

Training in decision making increases the skills of the decision makers. Professional military education of officers and senior enlisted should provide instruction on both methods of decision making. Schools and field training should continue to emphasize the tenets of the maneuver warfare. These tenets stress the initiative and decision making of subordinates

allowing them to take advantage of battlefield conditions to exploit uncovered opportunities. This freedom of action is tied to the responsibility of subordinates to adhere to the commander's intent and to provide timely and accurate information. However, peacetime training often stifles initiative. Over analysis by strict adherence to the analytical method or over supervision by superiors slows the decision making process. These two areas alone do more to hinder the training of the operational commander and subordinate decision makers for the high tempo of operations needed to be successful in combat.

To be an effective decision maker, the commander must understand the human dimensions of combat. Modern technology and tactics make continuous and sustained operations a certainty on today's battlefield. The commander needs to be able to recognize the cumulative effects of stress and fatigue in his staff and subordinate commanders. The critical skills of decision making, judgment, and thinking degrade rapidly under the effects of fatigue and stress. Liaison officers can assist the operational commander by observing subordinate commanders and reporting potential problems. One of the more difficult tasks for commanders is recognizing the signs of stress in themselves. The operational commander should have a close advisor provide him with comments and observations that may show signs for stress-related deficiencies.[12]

CONCLUSION

Operational success is based on the commander making the right decisions during "war planning" and "war fighting". These operational decisions are the product of previous decisions made concerning the organizational structure and the informational flow. The goal of the commander is to speed up his decision making while at the same time freezing or slowing the

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enemy's cycle by making him react to our style of warfare. This goal can be achieved by focusing on three key areas. First, commanders and staffs must realize that there are two methods of decision making. The analytical method, which is appropriate for "war planning", and the recognitional method, which is designed to support "war fighting" are not competitive but complementary methods designed to support the decision making process. Second, planning is as thorough as time allows. The 70 percent solution executed timely is more important than the 95 percent solution executed late. Third, every decision must be made based on enemy and friendly capabilities. Decisions can only be made if the information required is provided. The CCIRs are the commanders' effort to ensure the right information is provided. The CCIRs should support his decision making and allow him to make timely decisions This process is not an attempt to achieve certainty but an attempt to manage large quantities of information. Overall, the commander must balance his decision making method based on the time and information available to him.

Decision making places a high premium on the human dimensions of combat. At the operational level, decision making is critical because the commander's decisions can effect not only the tactical aspects of the battle, but also the strategic goals of the campaign and ultimately the success of the war. The continuing evolution of the American style of war means that understanding decision making and the role of the decision maker must be continually studied and practiced.

> "Tactical competence can rarely attain victory in the face of outright operational incompetence, while operational ignorance can squander what tactical hard work has gained." [13]

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NOTES

1. Clausewitz, <u>On War</u> (Edited and Translated by Michael Howard and Peter Paret) (Princeton, New Jersey: Princeton University Press, 1976), p. 131.

2. Frank M. Snyder, <u>Command and Control: Readings and Commentary</u> (Cambridge, Massachusetts: Harvard University Center for Information and Policy Research, 1989), p. 14.

3. While there are many decision making methods, this section focuses on two key methods recognized in military decision making—analytical and recognitional. Key references were Major John F. Antal, <u>Combat Orders, Volume One Airland Battle</u> (Fort Irwin, California: National Training Center, undated); Gary A. Klein, "Strategies of Decision Making," <u>Military Review</u>, May 1989, p. 57; Major Michael D. Armour, "Decision-Making Process," <u>Military Review</u>, April 1984, p. 70; Colonel Charles T. Rogers, British Army, "Intuition: An Imperative for Command," <u>Military Review</u>, March 1994, pp. 38-40.

4. Colonel Charles T. Rogers, "Intuition: An Imperative for Command," <u>Military Review</u>, March 1994, p. 47.

5. U.S. Marine Corps, <u>FMFM-1 Warfighting</u>, (Washington: 1989), p. 69.

6. Colonel Charles T. Rogers, "Intuition: An Imperative for Command," <u>Military Review</u>, March 1994, p. 46.

7. John R. Boyd, "A Discourse on Winning and Losing," Lecture, U.S. Marine Corps Command and Staff College, Quantico, Va: August 1987.

8. Lieutenant Colonel Jack Burkett, USA, "Tactical Information—What You See Is What You Get," <u>Military Review</u>, November 1991, p. 39.

9. U. S. Marine Corps, <u>FMFM-1 Warfighting</u> (Washington: 1989), p. 67.

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11. Captain Kevin B. Smith, "Combat Information Flow," <u>Military Review</u>, April 1989, p. 51.

12. Major J.J. McMenamin, "Developing A Continuous Operations Capability," <u>Marine Corps Gazette</u>, February 1991, p. 70.

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